

**CDC Zika Business Partners Conference Call**  
**February 19, 2016**  
**12:00 pm ET**

Coordinator: Welcome and thank you for standing by. At this time all participants are in a listen-only mode. During the question and answer session, please press star 1 and record your name as prompted.

Today's conference is being recorded. If you have any objections you may disconnect at this time. I would now like to turn today's meeting over to Jonathan Lynch. Thank you - you may begin.

Jonathan Lynch: Hello and welcome to CDC's Broad Reach Business Sector conference call on Zika virus. I'm Jonathan Lynch, a Health Communication Specialist in CDC's Division of Emergency Operations.

We took a few minutes to make sure as many callers as possible could get on the conference call so thank you for your patience. Today we are going to discuss Zika virus, travel concerns, the impact of the disease, actionable information to communicate to your employees, and we're going to follow up with a Q&A.

We are fortunate to have three of CDC's most prominent experts on different aspects of Zika virus: Dr. Marty Cetron, Dr. Coleen Boyle, and Joint Information Center Lead, John O'Connor.

Given the size of this call we probably will not be able to get to everyone's questions. We encourage you to learn more about Zika virus at CDC's website, [www.cdc.gov/zika](http://www.cdc.gov/zika).

You can send follow up questions to CDC Info. The email address is [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov). If there are any media personnel on the line please call the CDC Press Office at 404-639-3286.

We will send out a transcript of the call as soon as it is available. Our first presenter is Captain Martin Cetron, Director of the Division of Global Migration and Quarantine, DGMQ, at the National Center for Emerging and Zoonotic Infectious Diseases.

Dr. Cetron's primary research interest is international health and global migration with a focus on emerging infections, tropical diseases, and vaccine preventable diseases in mobile populations.

Under Dr. Cetron's leadership DGMQ addresses Zika virus importation and the risk that Zika virus presents for travelers. Dr. Cetron you're up.

Dr. Martin Cetron: Thank you very much Jonathan and appreciate the opportunity to speak to such a distinguished group of business leaders. I thought what I would do is just open up with some basics about Zika virus and then we'll move on and leave time for questions.

But I did want to say that almost all of the information that I'll be sharing with you is available from the CDC website either on the Zika page or on the CDC Traveler's Health page with respect to the travel-specific guidance and the countries that are experiencing transmission.

So a little bit about the virus - Zika virus is in the family of flaviviruses or yellow viruses in the group of yellow fever, West Nile virus, and other flaviviruses like dengue that you may be familiar with.

As such this virus is predominantly transmitted by mosquitoes of the *Aedes* genus, and a principal vector in this epidemic appears to be the *Aedes aegypti* mosquito at least currently.

The virus generally causes no symptoms or very limited mild illness for most people. Only one in five people who are infected with the virus are likely to be symptomatic and the symptoms generally include fever, rash, joint pain, and red eyes.

However, the real concern with this virus is that infection in pregnant women has been associated with fetal loss, birth defects, and other adverse outcomes, though we don't have definitive data of a causal association, and Dr. Boyle will go further into it.

In Brazil and in other countries experiencing local ongoing Zika transmission, women who are infected during pregnancy have had a variety of adverse outcomes associated with maternal-fetal transmission of the virus, including fetal loss, microcephaly (a serious birth defect in which the baby's head is smaller than expected), neurologic abnormalities, and other adverse outcomes.

And this is really the focus of where the prevention efforts are about with regard to this virus, and that is protecting pregnant women from exposure to the virus and preventing adverse outcomes.

There's also been an association that's still being investigated with increased reports of Guillain- Barré syndrome, which is an autoimmune condition associated with the nervous system and observed in some people after infection with Zika virus. GBS occasionally leads to some paralysis, which is usually self-limited.

The Zika virus is spreading right now in the Americas and some other countries. On our website you'll find a list and maps of those countries - currently experiencing active local transmission. There are more than 26 countries in the Americas including all the regions: South America, Middle America, parts of North America, and the Caribbean.

The United States is at this point predominantly seeing travel-associated cases. As of yesterday, and these numbers are constantly in flux and will certainly change, there were more than 80 cases among travelers returning to the continental United States and Hawaii after acquiring Zika virus infection during travel to a location experiencing the epidemic.

None of these cases have been associated with local vector-borne transmission in a US state. One case, reported from Texas, involved sexual transmission of Zika virus from a traveler who returned from an affected area and passed the infection on to a partner. Local transmission has been reported from three US Territories: Puerto Rico, the U.S. Virgin Islands, and American Samoa.

We expect that the number of cases will increase as this epidemic is growing rapidly and spreading throughout the Americas. The *Aedes* mosquito, which is the principal transmission vector, is widely abundant throughout the Americas and is present in a number of southern states in the United States. We're continuing to learn more and aggressively following the epidemic but it's impossible to predict with any certainty what the patterns will be.

But we can learn from our experiences with other flaviviruses that are spread by *Aedes* mosquitoes -- like dengue virus, chikungunya virus, and other viruses of such that have caused epidemic disease in the Americas -- about what we might anticipate or expect with regard to Zika virus in the US.

We could have introduction of cases. We fully expect to continue to see an increase in cases among travelers returning to the United States from affected areas, possibly into the thousands of return travelers based on our experience with chikungunya, for example.

There have been instances of local transmission of dengue virus in various parts of the US where there are *Aedes aegypti* mosquitoes, but those outbreaks have generally in the past been small and self-contained.

Nonetheless providing an aggressive preparedness plan for the continental United States and Hawaii is an important part of CDC's ongoing efforts. Like any new emerging infection, it's important to be aware of what we don't know about this virus in terms of the likelihood and the duration of an epidemic and its ultimate size.

And we are constantly doing everything possible to continue to learn more about the virus, understanding how some infants born to women infected in pregnancy came to have neurologic abnormalities, the risk factors associated with infection, and the most effective strategies for detection, prevention, and control.

Currently there is no vaccine available for Zika virus, and so the prevention strategies and the guidance focus largely on mosquito bite prevention and avoidance of exposure.

There are large-scale mosquito-control activities that are being geared up in countries experiencing the epidemic as well as prevention - mosquito control activities that are being planned and already ongoing in the United States.

The people currently at risk for Zika virus include pregnant women who travel to Zika-virus-affected areas or live in these areas, whether they are expatriates, international workers, or the local populations.

Zika virus is transmitted to people primarily through the bite of an infected *Aedes* mosquitoes. These are the same mosquitoes that spread dengue and chikungunya viruses. There has also been evidence of sexual transmission. As I said, these are so far small numbers of cases that have been reported recently and that have been reported previously with regard to this virus. It's important to point out that pregnant women with a male sex partner who has lived in or traveled to an affected area are also at risk of acquiring Zika infection during pregnancy.

CDC has posted travel notices about Zika. We have three levels of travel notices in general and post them on our website to guide people that are traveling to, or living in, the areas of epidemic transmission.

The Level 1 notice is an outbreak notice, which advises people on the usual precautions. A Level 2 notice is an alert that there are special precautions that should be taken with regard to a disease condition, or special populations that are uniquely at risk for adverse outcomes from the virus, and this is the type of alert notice that we have currently right now for Zika virus.

And the special population that we're targeting with this information is pregnant women, and we're cautioning pregnant women to avoid travel to areas where Zika virus transmission is ongoing because increasing evidence of a link between Zika infection in pregnancy and microcephaly.

In addition, women who are contemplating becoming pregnant perhaps in association with their travel should seek consultation with their healthcare

provider about pregnancy intentions and timing in the context of the potential risks of Zika virus transmission and the ways to avoid infection.

We are advising all people who travel to an affected area to be very vigorous about mosquito bite avoidance, which involves using long sleeves and long pants for protection as well as FDA-approved insect repellent products.

And I think that in addition, because of the risk of sexual transmission, persons who are exposed to Zika virus in areas of active transmission should be cognizant.

Particularly, male partners of couples who are pregnant should consistently and properly use condoms or abstinence to avoid passing on the virus through sexual activity during the duration of pregnancy.

The travel notices as well as the countries at risk are posted on the CDC website, [cdc.gov/travel](https://www.cdc.gov/travel), and you can find very detailed and specific information in this regard.

Perhaps some of the questions that will derive from this and that would be of interest to the audience on this call are the types of advice and guidance that can be provided to expats living in countries with Zika virus transmission with regard to pregnancy.

A significant portion of companies have elected to relocate pregnant women. Companies that have had policies about allowing pregnant women to return for delivery late in gestation have thought to extend those policies back to the time of first recognition of pregnancy to allow women to move out of the area of risk at the time they first are aware they're pregnant or attempting to become pregnant.

These are some of the main highlights with regard to the epidemic. It is still increasing and growing. We expect that there will be many more cases.

Additional countries are likely to come onto the list. In early February, the World Health Organization declared a Public Health Emergency of International Concern with regard to Zika virus in particular because of the association with congenital abnormalities, microcephaly, and other birth defects and adverse fetal outcomes as well as the association that's under investigation with Guillain-Barre syndrome.

They, in announcing this Public Health Emergency of International Concern, have called for a global coordination of international partners to enhance detection, surveillance, diagnostic capability, advanced mosquito control, prevention strategies, and widespread commitment of research to accelerate production of a Zika virus vaccine.

—Emerging infectious disease threats are dynamic. More is learned all the time as new information becomes available or as progress is made in tracking the epidemic, and understanding the mechanisms by which these adverse events are occurring, or identifying specific risk factors or the absolute level of risk with regard to pregnancy.

This information will be shared to you and shared with everyone as quickly as possible in order to give everyone the best and most updated description we have. A reliable source of this information is the [CDC website](#), which we're committed to keeping updated and current on a 24/7 basis. I think with that I'll turn it back over to introduce our next speaker.



Jonathan Lynch: Okay thank you Dr. Cetron. Our second presenter is Dr. Coleen Boyle. She serves as Director of CDC's National Center on Birth Defects and Developmental Disabilities.

Her expertise is in the epidemiology and prevention of birth defects and developmental disabilities. Dr. Boyle is leading CDC's efforts to address the impact of Zika virus on pregnant women and their children. Dr. Boyle?

Dr. Coleen Boyle: Thank you very much Jonathan and thank you also to Dr. Cetron for providing a great overview and also giving the broad guidelines that CDC has been developing and will continue to develop. As Dr. Cetron mentioned, this is a very dynamic event so those guidelines will be updated as appropriate.

I'm going to talk about three main questions today. I'm going to repeat because I think it's worth repeating some of what you've already heard, and the areas that I'm going to talk about is what we know about the Zika virus infection and pregnancy.

I'm going to talk about the risks of microcephaly and other adverse pregnancy outcomes associated with a Zika virus infection, and then I'm going to talk a little bit about what women should know and do.

So for the first one, which is what we know about Zika virus infection and pregnancy, I think what CDC is trying to do is gather better information but at the same time share that information of what we know right now with you.

And the data on pregnant women infected with Zika viruses is limited, but we do know, and as Dr. Cetron mentioned, that about one in five people infected with Zika will develop symptoms.

So that means about 80% of the population will not have symptoms. With the limited data that we have it doesn't suggest that pregnant women are more susceptible or that they're more likely to have symptoms than non-pregnant or the general populations, and also no evidence so far to suggest that pregnant women experience more severe disease during pregnancy than women who are not pregnant or women or individuals in the general population.

We do have evidence, as you are all aware, that Zika virus does transmit from the mother to the fetus during pregnancy, and then we also have some evidence that transmission also occurs at the time of delivery.

Zika virus usually remains in the blood of an infected person for about a week, and there's no evidence that the virus will cause infections in a baby that's conceived after the virus is cleared from the blood. And currently, there's no evidence that Zika virus infection poses a risk of birth defects in future pregnancies.

So that's the first area. The second area I was going to talk a little bit about is what we know about Zika virus infection and the risk of microcephaly. Brazil has been having a significant outbreak of Zika virus infections since May of 2015.

And as we're all aware, the officials in Brazil noted an increase in the number of babies, a significant increase in the number of babies with congenital microcephaly during the fall of 2015 into the current time period of this year.

That time period in terms of the actual increase in microcephaly mapped or tracked well back to the increase in the exposure or the outbreak of Zika virus infections in the earlier part of May 2015.

Microcephaly is a birth defect in which the size of the baby's head is smaller than expected for their age, sex and ethnicity. And, microcephaly can occur because a baby's brain has not developed properly during pregnancy.

That's generally due to genetic causes or that the brain has started to develop correctly and then there's damage at some point during pregnancy.

And based on information we have available for some of the cases of microcephaly in Brazil, the latter seems to be the case that there is some insult in the latter part of the first trimester/second trimester that has essentially assaulted the brain and stops normal development.

So microcephaly is a lifelong condition. There's no cure or standard treatment for microcephaly, and it can range from mild to very severe and treatment options can range as well.

Babies with mild microcephaly might not experience any other problems beside the small head, and those babies might need routine checkups to monitor their growth and development.

But for more severe microcephaly, and that's what we have been seeing at least from the cases published in our MMWR, these babies will need care and treatment beyond focusing on managing their own health; they'll need care and treatment focused on managing their health problems.

Developmental services early in life can help babies with microcephaly and essentially improve and try to maximize their physical and intellectual abilities, but that is really a rather dramatic occurrence and it does have lifelong consequences.

So many questions remain about the link between Zika and microcephaly, and researchers both here at CDC as well as in Brazil and other countries are working hard to learn more.

Current and future studies as well as lab testing can help us learn about the risks of Zika virus infection, and as Dr. Cetron said as soon as we get additional information we will pass that on to you all.

So the third area I was going to talk about is what should pregnant women know and do? Due to this association between Zika infection and microcephaly, pregnant women should take special precautions.

There is no vaccine available to prevent, or antivirals to treat, Zika, and CDC recommends that, as Marty mentioned, pregnant women in any trimester should consider postponing travel to areas where Zika virus transmission is ongoing.

And again, as Dr. Cetron mentioned, information about those countries is available at our website and updated when we get additional information.

If the pregnant woman does travel to an area or needs to travel to an area, CDC recommends that she talk to her healthcare provider and strictly follow the steps to avoid mosquito bites during her trip.

Those were mentioned by Dr. Cetron, and again there's some very explicit ways that that can be done, and those include wearing long sleeve pants and shirts, using a DEET or other products that are EPA recommended, and using them according to product label, which is very important.

And then there's a number of environmental ways that we can address mosquitoes within the context of emptying standing water from containers and installing or repairing screens and windows and then making sure if possible that they're sleeping in an air conditioned room to minimize mosquitoes. And more of that information is available online.

And as Dr. Cetron also mentioned there is evidence that the virus can be sexually transmitted from a man to his sex partners. CDC recommends that men who've traveled in or traveled to an area where Zika virus is active should abstain from sex or use condoms the right way every time they have sex with the pregnant women. It's extremely important.

Additionally, CDC recommends that pregnant women talk with their healthcare provider about their male partners' potential exposure to Zika virus and the symptoms of a Zika-like illness.

So what should women trying to get pregnant know and do? Until we know more, CDC recommends that women trying to get pregnant and their male partners connect with their healthcare provider before traveling to areas where a Zika virus transmission is active and that they take steps to prevent mosquito bites during the trip.

And similarly because sexual transmission is possible both men and women should strictly follow steps to prevent mosquito bites during that trip. CDC has a number of guidelines that were already mentioned for healthcare providers, but I want to mention two important points.

The first is that all providers should be sensitized to obtain a travel history from all pregnant women and use this recent travel history to guide decisions about testing.

Secondly, Zika is now a notifiable - a nationally notifiable - condition, which means that healthcare providers are encouraged to report suspected Zika cases to their state and local health departments to facilitate diagnosis, as well as the important issue of following back eventually in terms of vector control.

So there are two other things I was going to mention. One is that we have interim guidelines for pregnant women and women of reproductive age with possible Zika virus exposure, as well as new guidelines that came out today for the testing and evaluation of infants with possible congenital Zika virus exposure.

And those are all available online were were developed in collaboration with our partners and the American College of Obstetrics and Gynecologists, the Society for Maternal-Fetal Medicine, and the American Academy of Pediatrics.

Because there are limited data and experience with Zika virus and pregnancy, we will continually evaluate any new or emerging data that may inform those recommendations.

And as appropriate those recommendations actually have been updated since they were initially issued and as more information is gained and we need to do that we will put out new guidelines as well.

So I think I'm going to stop there and hand it back to our moderator to pass it to the next speaker.

Jonathan Lynch: Thank you Dr. Boyle. Our third presenter is John O'Connor. He's the Associate Director for Communications Science and Director of the Health

Communications Science Office at the National Center for Emerging and Zoonotic Infectious Diseases.

Mr. O'Connor is also leading the Joint Information Center for CDC's Zika virus response. We asked Mr. O'Connor to help explain some of the messages that could be useful for sharing with employees and colleagues. Mr. O'Connor?

John O'Connor: Thanks, Jonathan, and good afternoon everybody. It's really a pleasure to be able to go through some of these key messages with you this afternoon. As Jonathan mentioned I'm leading the Joint Information Center for the Zika virus response. This is a group of individuals that does its work in terms of messaging and communications by using risk communication principles to provide people with the information that they need to protect themselves.

We work to get our information out as quickly as possible. We try to ensure that it's accurate. We want to make it actionable so we can give people things they can do. We make it culturally appropriate, whether by translating into a language or by writing it at different kinds of reading levels so that the information gets to the audiences that we're trying to reach.

We use a variety of channels, going through traditional news media, social media, web, which has been mentioned a couple of times today, and outreach to various organizations, using conference calls such as this one.

So what I wanted to do with you today is just to share three or four of our top messages, keep it simple, and give you the kinds of messages that you might be able to share with your employees in terms of things they can do to protect themselves from Zika.

Some of this information you may already know -- it's similar to what you heard from Dr. Boyle and Dr. Cetron. One of our principles is that repetition of messages is a good thing when we're disseminating prevention messaging.

So the first one is discouraging travel for pregnant women to Zika-affected areas. We ask that they consider postponing travel to any area where Zika virus is spreading.

If a pregnant woman is considering travel to one of these areas, before they or their male partner do travel they should talk to their healthcare provider.

We encourage stringent use of mosquito repellent for those who do travel. Couples trying to get pregnant who plan to travel to one of the areas where Zika virus is spreading should talk to their healthcare provider first, and strictly follow the steps for preventing mosquito bites during the trip.

Insect repellents registered by the Environmental Protection Agency are able to repel the kinds of mosquitoes that spread Zika virus, provided that the EPA-approved labeling says that the product is for use against mosquitoes in general or specifically against *Aedes* mosquitoes, which are the ones we're really worried about with regard to Zika.

When used as directed these insect repellents are proven safe and effective even for pregnant and breastfeeding women. There's been some confusion about whether these products are safe and that's why we strongly encourage people to pay close attention to the instructions on labels.

People should always follow the instructions carefully. They should apply the insect repellent as directed and they should not spray insect repellent onto their skin or under clothing.



As you heard Dr. Boyle say, we encourage doctor's visits for pregnant women who may have been exposed to Zika virus and who might have symptoms. Pregnant women should see a doctor if they develop a fever, rash, joint pain, or conjunctivitis or red eyes during their trip or within two weeks after traveling to a country where local transmission of Zika has been reported.

As you've also heard CDC has guidance for pregnant women and that they - this guidance can also help doctors decide which tests need to be done if they have been exposed.

Both Dr. Cetron and Dr. Boyle talked about the sexual route of Zika transmission. There was a report of the case in Dallas a couple of weeks ago, so we have guidance on our website about steps that people can take to protect themselves.

We know that some of these topics can be sensitive to discuss with employees, such as suggesting that men who are infected with Zika use condoms to avoid transmitting the disease to pregnant partners. When these subjects are sensitive or awkward we've got material on our websites that can be helpful to providing that information to employees.

And we have other messaging that's available on the websites. You can find these documents at our Zika site, [www.cdc.gov/zika](http://www.cdc.gov/zika). We also put out a document that we refer to as our key messages, and this comes out once a week. It is updated with the latest information that we have. Everybody on this call can sign up for that document and I think Jonathan is going to explain later how you can do that.

We also encourage you to check the website regularly. As you've heard from Drs. Cetron and Boyle there's a lot of new information coming out very rapidly about this outbreak and what Zika does and doesn't do.

And so we encourage you to check back to the website regularly and get the latest information that way. With that I'll turn it back to Jonathan.

Jonathan Lynch: Thank you. Thank you very much. We are now going to move into the question and answer portion of today's call. We're going to alternate questions from the phone with those that have been submitted via email prior to the call.

Operator if you would please open the line for questions. We're going to begin with a question that I have for John O'Connor. John, several websites have provided misleading or speculative information regarding Zika.

What is the best tactic for our listeners to make sure they're receiving high quality information?

John O'Connor: Thanks for that question, Jonathan. In a nutshell, the best tactic is to educate yourself. One of the topics that has been in the media a lot recently is the issue of a larvicide that was introduced into the drinking water in Brazil. The theory is that this larvicide or pesticide is the cause of birth defects in children.

We are open-minded here at CDC. We are constantly looking for different explanations about what might be causing something. Experts in different parts of government and elsewhere have considered this theory about larvicide being responsible for microcephaly, and they've refuted it. The theory has been debunked.

The larvicide is registered for use in the United States and in Brazil. It's been used for decades without having any evidence of microcephaly.

When you see these kinds of alternate explanations during an outbreak of an emerging infectious disease, it's not really unusual. We saw the same kind of phenomenon with Ebola in West Africa. There were other local explanations about what was causing the illness there. The key for overcoming this misinformation is to go to a source that you have confidence in. We think that that source for you is the CDC website.

And when we get information that is different or new, then we make a point of updating the website so that you've got the most current and accurate information available.

Jonathan Lynch: Thank you for that. Operator do we have any questions on the phone?

Coordinator: Thank you. And as a reminder if you have a question or a comment it is star 1. Make sure your phone is unmuted and record your name. And to withdraw that request you may press star 2.

Our first question or comment comes from Dr. Warner Hudson and please state your organization.

Dr. Warner Hudson: Hi it's Dr. Warner Hudson from UCLA. My question relates to research. A number of institutions are (unintelligible) and just view the protocols for safe use and transport of large volume live Zika in research labs around campuses, et cetera. If you have those at CDC already and can share those - I've looked and haven't found them. Thank you very much.

Dr. Martin Cetron: I believe what I heard was - the question was about whether there's existing CDC guidance on moving specimens between research labs, and if we have guidance like that can we share it.

And I think that guidance is available and we can post it and we'll try to get back to you with the specific answer to the question. I don't think the lab folks are on the call with us here.

Dr. Warner Hudson: Right. You know, the whole lab safety process, HAZCOM, would be very helpful to have available.

Dr. Martin Cetron: Yes that's a great question, duly noted and we'll try to get back to you with more information about that.

Dr. Warner Hudson: Thank you so much.

Coordinator: Thank you. Our next question or comment comes from (Kathy Wess) and please state your organization.

(Kathy Wess): Hi. I'm with IBM and my question concerns the duration of time that condoms should be used in people who are either pregnant - well I know for pregnancy it's for the duration of the pregnancy.

But if you are trying to get pregnant and the male partner's been to a Zika affected area how long should they use condoms?

John O'Connor: Hi there. This is John O'Connor. I'll take a shot at that. As we mentioned on the call, a lot of the information that is breaking with regard to Zika virus is new. The guidance we have right now is that for a man who's coming back to the US from a Zika-affected country we advise that they either abstain from

sex or that they use condoms appropriately for the duration of their partner's pregnancy.

We are in the process of conducting studies right now for determining the length of time that the virus remains in the semen. There's a recently published report that this period may be about 60 days.

This is an area where a lot of work is being done and we expect to have more information about that very soon.

(Kathy Wess): Okay. England's Public Health Department published a 28-day recommendation, which a travel service that a lot of companies use picked up as their reference point.

So it sounds like you're saying that at this point that's not a duration that CDC endorses.

Jonathan Lynch: Dr. Cetron...

Dr. Martin Cetron: What you'll see right now is the fact that there is a lot of missing information and unknown knowledge about this level of the duration semen remaining in semen...

Jonathan Lynch: Dr. Cetron it sounds like your phone is coming in and out. I just wanted to warn you of that.

Dr. Martin Cetron: Okay let me see if I can make this a little better. There. The advice that's out there is kind of all over the place. The Public Health England advice is at

28 days. There is some advice from the EU and other places that is going out to several months. There's some advice at WHO I think that's just coming out talking about 28, 30 days.

And as John O'Connor mentioned there is a report of viral fragments that were isolated by a PCR assay I think at 62 days. I think the truth is when you see those kind of discrepant recommendations it usually means there's a big knowledge gap, and CDC is actively doing the research to determine, one, how much virus and by what methods.

Is it just viral fragments of RNA from PCR? Is there viable virus in semen and for how long and what is the evidence on transmission risk at different time points following that? So all of those are really unanswered questions at this point that we're actively been engaging in research to get some solid information to make a solid recommendation.

So I think until we have more information to give you a definitive answer, you're going to see a wide range of answers that are out there in the various national recommendations.

(Kathy Wess): Okay thank you very much. That's real helpful.

Jonathan Lynch: Okay thank you very much. And I'm going to move to a question that was submitted by email previously. This is from an - a Dr. Olivier Lo. "Do we know if a fully recovered patient from a Zika viral infection, that is somebody with blood is - whose blood is IgG positive can be considered immune against any new Zika virus infection?"

And the reason they ask is he says that, “The literature is mentioning a different lineage: African versus Asia-Pacific. Does this translate into different antigenic serotypes of the Zika virus?”

Dr. Martin Cetron: Yes. I could try to take this. I can try to take this question from Dr. Lo. So based on information that - have from other similar infections we believe at this point once you’ve been infected with Zika virus you’re likely to be protected from future infections with Zika.

I think the lineage differences that are mentioned in terms of the African strain versus the Asian strain are something that can be discerned by whole genome sequencing in terms of origin, but most of the antigenic parts of the genome are largely conserved and it is believed that the protection against one would cross over to the other.

And I do note the, you know, that there are some exceptions within the flavivirus region where different types of dengue virus for example, you know, sometimes can lead to secondary infections with the other type.

In those cases those are antigenically very distinct types of - clear types of dengue virus in setting up that scenario. That’s not what our current understanding is for Zika infection.

But again until very recently the world’s experience with Zika virus was extremely limited, small numbers of case, small outbreaks on islands and we have not seen a large-scale massive epidemic of Zika virus in the numbers that we’re seeing now, you know, in history.

And as a consequence we will learn things about this virus in the setting of a large outbreak that we may not have been familiar with in the past.

Jonathan Lynch: Excellent. Thank you. Operator do we have any more questions on the phone?

Coordinator: Yes we do. Our next question or comment comes from (Peter) and please state your organization.

(Peter): Hey this is (Peter) with General Electric. Appreciate the talk and the guidance. My question is centered around what evidence would need to be presented so that the CDC would take the position of banning travel to areas of outbreak?

Right now it's the position is more of consider postponing, speaking to your primary care physicians. Maybe it's not outlined yet but in your opinion what would it take for us to suggest to our employees to not travel to that area?

Dr. Martin Cetron: So this is Marty Cetron and I'll take a crack at this. We have a really unique situation here in which we previously understood a very mild virus causing a very mild illness in the infected individual, and only about 20% of those infected with any illness at all would not necessarily rise to the occasion of the international concern that it has.

And it is a unique setting of this illness in pregnant women that has devastating fetal outcomes and lifelong impactful fetal outcomes. Our advice is targeted about protecting pregnant women from infection as a result of the consequences downstream.

In that way it is very different from a kind of epidemic like Ebola in which it is devastating high fatality rates for most of those who become infected.

The advice to not go for the Level 3 kind of a travel notice that was used for the Ebola-affected countries in West Africa really is based on that important



distinction, that the inability to, in widespread community transmission, protect oneself from a lethal infection without treatment or any prevention strategies.

And that's a whole different kind of order of magnitude here so we're trying to be very focused about protecting the public health impact of this epidemic.

And unless we learn something that's very devastating across wide swaths of the population with regard to Zika virus, that all who go there and all who are bitten are likely to have these kinds of devastating outcomes, it wouldn't necessarily rise to that threshold.

There are significant consequences: widespread travel and trade bans and not the least of which is the inability to get effective resources into those countries to combat the epidemic in the first place.

We really tried to balance the risks and the benefits and our advice and guidance have focused on having the greatest impact in preventing an adverse public health outcome.

For most people, even if they were to go and be bitten, this viral infection is not going to have a serious public health outcome. It's a very, very narrow, targeted population that's uniquely at risk for this devastating congenital abnormality. So I hope that's helpful.

(Peter): That's very helpful. Thank you very much.

Jonathan Lynch: Thank you for that. We had a question come in for Dr. Boyle. "We have heard that the CDC Foundation is helping with Zika prevention kits. Can you tell us what's in the kit and how the business community can help with this effort?"

Dr. Coleen Boyle: I'd be happy to. And as Dr. Cetron just said that our way to help in the prevention lane is really to try to target pregnant women or women early in pregnancy.

And one of those targeted ways is what we call the ZPK kits, or the Zika prevention kits, and they're meant to serve as a prevention toolkit for pregnant women and they include educational materials to help pregnant women get a better sense of how they can protect themselves.

But it also has some very practical things like insect repellent, that FDA-approved insect repellent, condoms in terms of protecting against sexual transmission of Zika, a thermometer for monitoring whether or not they develop symptomatic disease, and then other kinds of mosquito repellent issues such as bed nets and Mosquito Dunks, all of the things that you heard about earlier.

We so far have put these kits together - a prototype of those and a number of them are being sent right now to Puerto Rico because there is a real concern about a potential epidemic of Zika in Puerto Rico. We're seeing a number of cases that are occurring there. ZPKs are also being sent to American Samoa and the U.S. Virgin Islands.

So those are three areas that we are targeting, knowing that there is ongoing transmission there. We'll be needing an additional, we estimate, 45,000 kits just for these populations.

Jonathan Lynch: Thank you. Operator are there any more questions on the phone?

Coordinator: Yes we have more questions. Our next question or comment comes from Jeff Moller and please state your organization.

Jeffrey Moller: Hi this is Jeff Moller, the Association of American Railroads, and my question has been answered so I'll be quiet.

Jonathan Lynch: Thank you. Operator do we have any more?

Coordinator: Yes. Our next question or comment is from (Pamela Fanton) and please state your organization. Okay (Pamela) took herself out of the queue. Our next question or comment is from Gregory Gist and please state your organization.

Gregory Gist: Hello. I work for the Financial Services Information Sharing and Analysis Center. My question surrounds blood transfusions. I wanted to ask if it is accurate that the Brazil authorities have detected modes of transmission through blood transfusions, and if the CDC recommendation of waiting 28 days is a global recommendation particularly with large international companies that have employees traveling all over?

Dr. Martin Cetron: I can take a shot at this. This is Marty Cetron again. So there are reports at this stage -- limited reports out of Brazil -- of possible blood transfusion related transmission of Zika.

And you can imagine that in the setting of a large-scale vector-borne epidemic sometimes it will be hard to tease out from those types of exposures and limit it but there have been reports in that setting.

The U.S. is taking aggressive steps at protecting the blood supply in areas of transmission. The FDA released guidance and advice on Tuesday of this week in that specific regard, and that will include both for donor deferral for people

who've been traveling in Zika affected areas, as well as protecting the blood supply through an outsourcing process in areas of US territories where there is active transmission.

These steps are or we hope they are interim steps until there is a licensed tool for detection of contaminated blood or pathogen inactivation, and those efforts are also aggressively ongoing.

I think this is an area that's rapidly evolving where it would be good to stay close to what the CDC guidance and the FDA guidance is on this topic. And I do believe that as the international community sort of picks up speed in terms of capability that we'll see some convergence around guidance in terms of protecting the safety of the blood supply.

And this also extends potentially even beyond the blood supply to other organ and tissue donations or fertilization and other aspects. As we learn more about the risk of that material and those tissues in terms of transmission, you will see additional guidance and prevention steps underway.

Gregory Gist: Thank you very much. That was very helpful.

Jonathan Lynch: And operator we're going to take three more questions. Do we have another question on the line?

Coordinator: Yes. Our next question or comment comes from Dr. (Scott Mayle) and please state your organization.

Dr. (Scott Mayle): Hi, (Scott Mayle), Fiat-Chrysler. My limited understanding is such that the Ugandan virus discovered in this - 40s does not produce microcephaly. Is that

valid and if so do we have any explanation as to the discrepancy between that and what we're seeing presently?

((Crosstalk))

Dr. Coleen Boyle: So this is Coleen Boyle. I'll take a crack at that one. So the virus itself has been pretty limited until fairly recent years when was an outbreak in Yap as well as in the French Polynesian and that was with not the African-based strain but the Asian-based strain.

Yap is a fairly small island, and there wasn't any note of microcephaly there. Subsequently, after the French Polynesian outbreak, which is a more recent outbreak in 2013–2014, investigators did go back and look and actually identified a number of cases of suspected microcephaly.

They identified provisionally about ten children or ten pregnancies that were impacted there. So although it wasn't noted previously and wasn't noted in Yap, it was noted in a retrospective review in French Polynesia.

Jonathan Lynch: Thank you Dr. Boyle. Operator do we have another question on the line?

Coordinator: Yes. Our next question or comment is from (Chris Corneus) and please state your organization.

(Chris Corneus): Hi my name is (Chris). I work for Air Canada and I was just wondering if the CDC is considering any guidance material for airlines who specifically operate routes to countries that have active transmission of Zika, namely any disinfection procedures or protocols when returning back to the US.

Dr. Martin Cetron: So this is Marty Cetron. I'll take this one. Although, you know, one might instinctively think that the first thing we should jump to is aircraft disinfection in this regard I think there's scientific evidence based on the impact of the aircraft disinfection with regard to preventing international translocation of Zika virus is actually quite limited.

The predominant means by which this virus is moving across international borders is with infected travelers and the bloodstream of infected people, not necessarily mosquitoes.

When studies have been done on identifying mosquitoes on aircraft particularly of this species, it's less than one mosquito. It's about - 80 mosquitoes have been found for every aircraft carrying 200 to 300 people.

In addition, the real risk is in terms of the viral infection is the larvae and - most of what happens in aircraft disinfection is adulticiding for adult mosquitoes, not addressing sort of larvicide.

The other challenge of course is these are really difficult mosquitoes to hunt down and ferret out. They hide in indoor obscure places. They're an indoor day biting mosquito, not so much like the *Anopheles* mosquito.

A lot of this disinfection emerged at a time of discussion around a phenomena called airport malaria, in which within a 10 kilometer radius around an airport there seemed to be clusters of malaria that were perhaps due to translocated *Anopheles* mosquitoes that had been infected on their flights out of Africa.

We have not heard about airport-related *Aedes*-spread diseases like dengue and airport dengue phenomena have not been observed. And the range of flight of these adult mosquitoes is also quite limited.

So I think that while it might seem like an instinctual first step there are many more impactful ways to deal with vector control, source control, indoor aspects of spraying, reducing of standing water that are going to have a much greater impact than an aircraft disinfection proposal.

This topic is actively being discussed in the international community at WHO with regional offices. CDC is an active participant in these consultations with WHO.

But it is our position at this time that there's probably little scientific evidence to support the impact of this approach. Now that is under the international health regulations and which has a section on disinfection, WHO and other international organizations and member states may enact their own regulatory authority to require or not such policies.

So that's a sort of a separate issue and staying tuned in terms of what actually will transpire. I was just giving you our take on the evidence base of that as a measure.

(Chris Corneus): Thank you very much.

Jonathan Lynch: Thank you and thank you Dr. Cetron. Operator we'll take one last question.

Coordinator: Thank you. And our final question comes from Keith Spadaro -- I apologize -- and please state your organization.

Keith Spadaro: Hi I'm from AXA Financial in New York and thank you very much for this informative session. I have one question. Do you anticipate at this time these

mosquitoes getting into the the southern United States and working their way up in the warmer weather?

Dr. Martin Cetron: So this is Marty again. We have *Aedes* mosquitoes already in the southern United States in about 29 states and the District of Columbia in terms of between the *Aedes aegypti* and *albopictus*.

The *Aedes aegypti*, which we think is the predominant driver - vector driver of this epidemic, is a little bit more restricted in terms of the southern states but we do have those mosquitoes present.

We have mosquito monitoring and trapping programs and vector control programs in states, and we're certainly gearing up with planning as we move into the warmer weather in the spring to do everything possible to prevent the introduction of virus into those populations from return travelers.

One of the best ways to do that in addition to sort of a vector control strategy is literally to focus on reducing exposure of ill return travelers to mosquitoes. So mosquito bite prevention for the first week of illness, which is when the virus, often found and detectable in the blood, is going to be the best approach to that.

Protecting sick people who've returned that have compatible illness with Zika from being exposed to mosquito bites is a good part of that strategy.

And Dr. Boyle has already indicated some of the approaches which involve being covered up, using repellents, staying inside an air-conditioned home, having the screens, et cetera.



Based on our experience with dengue and dengue outbreaks on our southern border on the Mexican side of the border, which have been much larger and with much greater numbers of cases and with greater spread -- even in the sister cities exactly on the opposite side of the border, they've been much more limited in terms of the clusters of the outbreaks of dengue. And in large part it's human behavior and socioeconomic factors that are associated with different housing structure and different densities of the mosquito population and exposure.

So I think we have to be cognizant of that and accelerate our efforts at providing barriers -- vector control -- and then barriers between infected people and our native-based mosquitoes.

Dr. Coleen Boyle: Yes and this is Coleen Boyle. And that really translates to the fact that we live in air-conditioned buildings and we have screens on our windows so that's the - sort of the easy way of thinking about it.

Keith Spadaro: Could I ask a quick follow up to that?

Jonathan Lynch: Yes please.

Keith Spadaro: I have 1800 people going to a conference down in southern Florida, a lot of them at the age where they're having children/looking to have children. Is there any kind of warning or information I can get out to them so if they think it's not the right thing for them to do? Would that be prudent do you think?

Dr. Coleen Boyle: Well this is Coleen. I would just share with them the information that we have shared with you in terms of how to prevent mosquito bites. Right now that is not an active area of transmission.

But mosquitoes transmit other diseases and it's important to protect yourself.

Keith Spadaro: Yes. Okay thank you very much.

Dr. Martin Cetron: Yes and like I highlighted at the very opening we don't have local vector foreign transmission in any of the states in the United States right now. The only instance of a locally transmitted case was through that sexual transmission in Dallas that we reported on earlier.

So we will be monitoring the situation with vector surveillance and human surveillance, and as I said we fully expect to see more introduced cases in return travelers but that doesn't automatically mean that we have set up a cycle of transmission in the southern states.

So just because those states may have presence of the *Aedes* mosquito doesn't mean they have local transmission.

Keith Spadaro: Great. Thank you.

Jonathan Lynch: Thank you and thank you Dr. Boyle and Dr. Cetron. We've reached the end of our time for this call. Thank you everyone for listening in and asking questions.

As soon as the audio recording and a transcript are available we will send a link to our Public-Private Partnerships team. Please feel free to forward it on to colleagues and business partners who may also be interested.

For those of you who have already submitted questions that were not answered, our Public-Private Partnerships team will work with other internal organizations within CDC to follow up on your questions.

Further questions can be sent to [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov). That's [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov). CDC is receiving a very high volume of questions so some responses may be delayed.

Please don't forget to visit our website, our Zika website, at [www.cdc.gov/zika](http://www.cdc.gov/zika). This site provides in-depth information and regular updates.

And one more promotion. CDC's Emergency Partners newsletter is available by subscription. It provides a link to the Zika Virus Key Messages document. To subscribe please send a request to [emergencypartners@cdc.gov](mailto:emergencypartners@cdc.gov) and we will reply with a subscription link. Thank you for joining us, and operator this concludes the call.

Coordinator: That does conclude today's conference call. Thank you for your participation. You may disconnect at this time.

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